

What is claimed is:

1. A method of detecting particulate or fluid flow from a first location to a second location comprising the steps of:
 - introducing a tracer matrix comprising a polymeric material and a photoactive material to the first location; and
 - detecting the photoactive material at the second location.
2. The method of claim 1 wherein the photoactive material comprises a fluorophore, a dye, or a pigment.
3. The method of claim 1 wherein the photoactive material comprises a fluorophore, dye, or pigment that has a blue, green, yellow, orange, orange-red, or red-far red absorption or emission spectrum.
4. The method of claim 1 wherein the polymeric material comprises a cross-linked polystyrene derivative.
5. The method of claim 1 wherein the polymeric material protects the photoactive material from degradation downhole.
6. The method of claim 1 wherein the polymeric material is substantially water-insoluble.
7. The method of claim 1 wherein the polymeric material comprises a latex, a polystyrene, a polyvinyl chloride, a polyester, a polyolefin, a polycarbonate, or a polybutadiene.
8. The method of claim 1 wherein the tracer matrix is covalently derivatized.
9. The method of claim 1 wherein the tracer matrix is formed by a nucleophilic substitution reaction, a hydroboration reaction, an organo-metallic bond-forming reaction, a pericyclic bond-forming reaction, or a combination of oxidation and reduction reactions.
10. The method of claim 1 wherein the tracer matrix is formed by an emulsion polymerization process.
11. The method of claim 1 wherein the tracer matrix is formed by coating the polymeric material on the photoactive material.
12. The method of claim 1 wherein the tracer matrix is formed by a swelling/shrinking process.

13. The method of claim 1 wherein the polymeric material protects about 50% to 100% of the surface area of the photoactive material.

14. The method of claim 1 wherein the photoactive material is embedded within the polymeric material.

15. The method of claim 1 further comprising the step of adding the tracer matrix to a fluid before introducing the matrix tracer into the first location.

16. The method of claim 1 wherein the photoactive material comprises fluorescein, rhodamine B, Nile Blue A, or acridine orange.

17. The method of claim 1 wherein the tracer matrix further comprises a second photoactive material.

18. The method of claim 1 wherein detecting the tracer at the second location comprises using a UV detector, a colorimeter, or a fluorimeter.

19. The method of claim 1 wherein detecting the tracer at the second location comprises quantitative analysis of the tracer.

20. The method of claim 1 wherein detecting the tracer at the second location comprises qualitative analysis of the tracer.

21. A method of detecting flow from a first zone and a second zone in a multizonal well in a subterranean formation comprising the steps of:

introducing a first photoactive tracer into the first zone;
introducing a second photoactive tracer into the second zone; and
detecting the first and the second photoactive tracers in the return flow

from the first and second zones.

22. The method of claim 21 wherein the first photoactive tracer and the second photoactive tracer have a different absorption or emitting wavelengths.

23. The method of claim 21 wherein the first photoactive tracer or the second photoactive tracer comprises fluorescein, rhodamine B, Nile Blue A, or acridine orange.

24. The method of claim 21 wherein the first photoactive tracer or the second photoactive tracer comprises a fluorescein gel concentrate.

25. The method of claim 21 wherein the first photoactive tracer or the second photoactive tracer comprises a tracer matrix that comprises a photoactive material and a polymeric material.

26. The method of claim 25 wherein the photoactive material comprises a fluorophore, a dye, or a pigment.

27. The method of claim 25 wherein the photoactive material comprises a fluorophore, dye, or pigment that has a blue, green, yellow, orange, orange-red, or red-far red absorption or emission spectrum.

28. The method of claim 25 wherein the polymeric material protects the photoactive material from degradation downhole.

29. The method of claim 25 wherein the polymeric material is substantially water-insoluble.

30. The method of claim 25 wherein the polymeric material comprises a latex, a polystyrene, a polyvinyl chloride, a polyester, a polyolefin, a polycarbonate, or a polybutadiene.

31. The method of claim 25 wherein the tracer matrix is covalently derivatized.

32. The method of claim 25 wherein the tracer matrix is formed by a nucleophilic substitution reaction, a hydroboration reaction, an organo-metallic bond-

forming reaction, a pericyclic bond-forming reaction, or a combination of oxidation and reduction reactions.

33. The method of claim 25 wherein the tracer matrix is formed by an emulsion polymerization process.

34. The method of claim 25 wherein the tracer matrix is formed by coating the polymeric material on the photoactive material.

35. The method of claim 25 wherein the tracer matrix is formed by a swelling/shrinking process.

36. The method of claim 25 wherein the polymeric material protects about 50% to 100% of the surface area of the photoactive material.

37. The method of claim 25 wherein the photoactive material is embedded within the polymeric material.

38. The method of claim 25 wherein the tracer matrix further comprises a second photoactive material.

39. The method of claim 21 wherein detecting either the first photoactive tracer or the second photoactive tracer comprises using a UV detector, a colorimeter, or a fluorimeter.

40. A method of detecting flow in a multiple-stage hydraulic fracturing treatment comprising a plurality of stages comprising the steps of:

introducing a photoactive tracer into each stage of the multiple-stage hydraulic fracturing treatment; and

detecting the photoactive tracer on a return flow.

41. The method of claim 40 wherein the photoactive tracer comprises fluorescein, rhodamine B, Nile Blue A, or acridine orange.

42. The method of claim 40 wherein the photoactive tracer comprises a tracer matrix that comprises a photoactive material and a polymeric material.

43. The method of claim 40 wherein a different photoactive tracer is introduced into each stage of the multiple-stage hydraulic fracturing treatment.

44. A method of verifying the functioning of a limiting tool that limits or restricts the flow of a fluid or particulate from a first location neighboring the limiting tool to a second location comprising the steps of:

introducing a photoactive tracer into the first location neighboring the limiting tool; and

detecting the photoactive tracer at the second location.

45. The method of claim 40 wherein the photoactive tracer comprises fluorescein, rhodamine B, Nile Blue A, or acridine orange.

46. The method of claim 40 wherein the photoactive tracer comprises a tracer matrix that comprises a photoactive material and a polymeric material.

47. A tracer matrix composition comprising a photoactive material and a polymeric material.

48. The composition of claim 47 wherein the photoactive material comprises a fluorophore, a dye, or a pigment.

49. The composition of claim 47 wherein the photoactive material comprises a fluorophore, dye, or pigment that has a blue, green, yellow, orange, orange-red, or red-far red absorption or emission spectrum.

50. The composition of claim 47 wherein the photoactive material comprises a fluorescein gel concentrate.

51. The composition of claim 47 wherein the polymeric material protects the photoactive material from degradation downhole.

52. The composition of claim 47 wherein the polymeric material is substantially water-insoluble.

53. The composition of claim 47 wherein the polymeric material comprises a latex, a polystyrene, a polyvinyl chloride, a polyester, a polyolefin, a polycarbonate, or a polybutadiene.

54. The composition of claim 47 wherein the tracer matrix is covalently derivatized.

55. The composition of claim 47 wherein the tracer matrix is formed by a nucleophilic substitution reaction, a hydroboration reaction, an organo-metallic bond-forming reaction, a pericyclic bond-forming reaction, or a combination of oxidation and reduction reactions.

56. The composition of claim 47 wherein the tracer matrix is formed by an emulsion polymerization process.

57. The composition of claim 47 wherein the tracer matrix is formed by coating the polymeric material on the photoactive material.

58. The composition of claim 47 wherein the tracer matrix is formed by a swelling/shrinking process.

59. The composition of claim 47 wherein the polymeric material protects about 50% to 100% of the surface area of the photoactive material.

60. The composition of claim 47 wherein the photoactive material is embedded within the polymeric material.

61. The composition of claim 47 wherein the photoactive material comprises fluorescein, rhodamine B, Nile Blue A, or acridine orange.

62. The composition of claim 47 wherein the tracer matrix further comprises a second photoactive material.

63. A method of making a tracer matrix that comprises a photoactive material and a polymeric material comprising the steps of:

swelling a polymeric material in an organic solvent comprising a photoactive material; and

removing the solvent so as to produce a tracer matrix comprising the photoactive material and the polymeric material.